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Large Pulper

The Large Pulper processes shipboard food, cardboard and paper waste (including classified documents) into a wet slurry for overboard discharge.

- The operator sorts waste on the feed tray to remove non-pulpables such as metal, glass and plastic. The operator then pushes the paper and food waste into the pulping tank. Seawater flow, at 100 gallons per minute (6 liters per second) is mixed with the waste. A quiet, cascading orificial restrictive device throttles the seawater flow from the shipboard firemain.

- A 20-hp (15-kW) motor rotates a two-bladed impeller at high speed past five stationary cutters. The impeller pulps the waste and generates a vortex to mix the seawater and waste.

- The processed pulp exits the pulping tank by gravity through 1/4-inch (0.64-cm) holes in a security ring (strainer). An 80 gallon per minute (5 liter per second) seawater eductor dilutes the slurry to less than 2% and discharges the waste overboard.

- The control system sequentially starts up and shuts down the Pulper. It alerts the operator to stop feeding the Pulper when the motor is overloaded. The control system stops the Pulper and shuts the seawater valves if the access or junkbox doors are open, if the pulping tank overflows, or if firemain seawater flow is lost.

- The operator cleans non-pulpable residue from the junkbox and pulping tank after shutdown.

A Large Pulper successfully completed a formal evaluation aboard the aircraft carrier USS GEORGE WASHINGTON (CVN-73) in 1994 and received approval for U.S. Navy procurement in 1995. Additional testing of Large Pulpers on the aircraft carrier USS ROOSEVELT (CVN-71) and amphibious ship USS WASP (LHD-1) has confirmed the reliability and acceptability of the Large Pulper.

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SOLID WASTE SYSTEMS

Large Pulper

Performance:

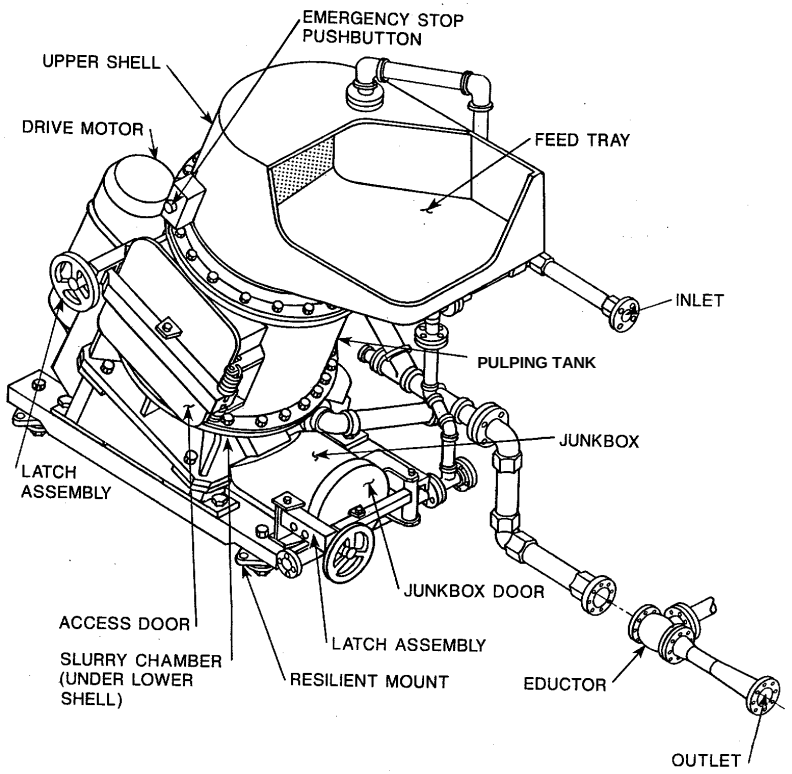
Processing Rate:	500 lb (227 kg)/hr paper and cardboard; 1,000 lb (454 kg)/hr food waste; 680 lb (304 kg)/hr mixed waste
Output:	wet slurry (1% to 2% by weight)

Envelope:

Weight:	3,600 lb (1.6 m tons)
Footprint:	85 in. (2.2 m) wide by 67 in. (1.7 m) deep by 70 in. (1.8 m) high
Maintenance and Operational Envelope:	107 in. (2.7 m) wide by 100 in. (2.5 m) deep by 78 in. (2 m) high
Control Enclosure:	bulkhead mounted (same compartment); 30 in. (77 cm) long by 8 in. (20.5 cm) wide by 30 in. (77 cm) high
Recommended Orientation:	fore to aft
Minimum Access for Installation:	26 in. (66 cm) by 54 in. (137 cm)

Services:

Electrical Power Supply:	440 Vac, three phase, 50 A, 60 Hz
Seawater Supply (including eductor supply):	180 gal/min (11 L/s) strained
Compressed Air Supply:	1.5 scfm (0.71 L/s) intermittent; 80 to 125 psi (552 - 862 kPa) for valve control
Recommended Seawater Supply Line Size:	2 in. (5.1 cm)
Recommended Discharge Line Size:	4 in. (10.3 cm)



- The Large Pulper consists of a 3-ft (1-m) diameter stainless steel pulping tank with an integral junkbox, a feed tray and a 20-hp (15-kW) electric motor. Seawater mixes with the waste to be pulped and to power the eductor. Separate air-operated valves allow water to the pulping tank and to the eductor.
- The Large Pulper is resiliently mounted and can be disassembled into modules that fit through a standard 26-by 54-in. (66-by 137-cm) hatch.
- The wetted parts are 316-L stainless steel, except for the piping, which is 90/10 copper nickel.
- All structural non-wetted parts are 304 stainless steel.
- The Pulper shuts down on loss of water, high level, or if any door is opened.